

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1, 4-6, 13-19, 21, 23, 26-34, 36, 38, and 41-43 are pending in the application, with claims 1 and 23 being the independent claims. Claims 7 and 8 are sought to be cancelled without prejudice to or disclaimer of the subject matter therein. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Allowable Subject Matter

Applicants acknowledge with appreciation the Examiner's indication that claims 4, 21, 41, 26, and 36 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Rejections under 35 U.S.C. § 102

Claims 1, 14-19, 23, 30-34, and 42 were rejected under 35 U.S.C. §102(e) as being anticipated by Kawamura, et al, U.S. Patent No. 6,940,975 (Kawamura). Applicants respectfully traverse this rejection.

Kawamura does not teach or suggest each and every feature of amended independent claims 1 and 23. Kawamura describes an implementation of DES having expansion E and permutation P integrated into one permutation. (Kawamura, col. 11, lines 40-43). As described in Kawamura:

The 32 bits output from the permutation p^{-1} 81b are the right 32 bits of an input to the first round. The 32 bits output from the permutation p^{-1} 81b are the left 32 bits of an input to the first round. The right 32 bits of the input are input to the EP 83, and the resultant data obtained by performing an expansion for the input is output to an exclusive OR 85. The excitation reconstruction section 85 calculates the exclusive OR of the data and the extended key K1 and outputs the resultant data to an S-box 84. The S-box 84 outputs a corresponding output to an exclusive OR 86 by looking up the table. The exclusive OR 86 calculates the exclusive OR of the left 32 bits output from the expansion E 81b and the output from the S-box 84 to obtain the right 32 bits of an input to the next round. The processing on the first state is repeated up to the 16th round

(Kawamura, col. 11, lines 44-61). Kawamura does not teach or suggest:

eight bit-slice modules, each bit-slice module including:

first circuitry configured to perform an exclusive OR (XOR) on a first bit sequence and a portion of a key provided by the key scheduler to generate a second bit sequence;

a DES substitution box (SBox) configured to transform the second bit sequence into a third bit sequence;

second circuitry configured to perform an exclusive OR (XOR) on the third bit sequence and a left portion of an input bit sequence for the current cryptographic round to generate a fourth bit sequence ,

wherein the fourth bit sequence is a right portion of an output bit sequence and a right portion of the input bit sequence is a left portion of the output bit sequence of a current DES round for the bit slide module;

permutation logic configured to receive the fourth bit sequence from each of the eight bit-slice modules and to perform a permutation on the received fourth bit sequences; and

expansion logic configured to generate a set of first bit sequences by expanding received bit sequences and to provide a first bit sequence to each bit slice module.

as recited in amended independent claims 1 and 23. For at least these reasons, amended independent claims 1 and 23 are patentable over Kawamura. Claims 14-19 depend from claim 1 and claims 30-34 and 42 depend from claim 23. For at least the above reasons, and further in view of their own features, dependent claims 14-19, 30-

34 and 42 are also patentable over Kawamura. Reconsideration and withdrawal of the rejection are therefore respectfully requested.

Rejections under 35 U.S.C. § 103

Claims 5-8, 27, and 28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kawamura in view of Ritter, U.S. Patent No. 5,727,062 (Ritter). Applicants respectfully traverse this rejection.

Claims 5 and 6 depend from claim 1; claims 27 and 28 depend from claim 23; and claims 7 and 8 were canceled by the above amendments. Ritter does not overcome all the deficiencies of Kawamura relative to amended independent claims 1 and 23 described above. For at least these reasons, and further in view of their own features, dependent claims 5, 6, 27, and 28 are patentable over the combination of Kawamura and Ritter. Reconsideration and withdrawal of the rejection are therefore respectfully requested.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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